$ AP 2613

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Before the Board of Patent Appeals and Interferences

Applicants	:	Gerard Briand et al.
Serial No.	:	10/075,839
Filed	:	February 13, 2002
For	:	Method and Device for Detecting Reliability of a Field of Movement Vectors
Examiner	:	Y. Young Lee
Art Unit	:	2613

APPEAL BRIEF

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

May It Please The Honorable Board:

This is Appellants' Brief on Appeal from the Final Rejection of claims 1-14. Please charge the $500.00 fee for filing this Brief to Deposit Account No. 07-0832. Appellants waive an Oral Hearing for this appeal.

Please charge any additional fee or credit overpayment to the above-indicated Deposit Account. Enclosed is a single copy of the Brief.

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I. REAL PARTY IN INTEREST

The real party in interest of Application Serial No. 10/075,839 is the Assignee of record:

THOMSON Licensing S.A.
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FEE TRANSMITTAL
for FY 2005

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT ($) **500.00**

Complete if Known	
Application Number	10/075,839
Filing Date	February 13, 2002
First Named Inventor	Gerard Briand
Examiner Name	Y. Young Lee
Art Unit	2613
Attorney Docket No.	PF010010

METHOD OF PAYMENT *(check all that apply)*

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FEE CALCULATION

1. BASIC FILING, SEARCH, AND EXAMINATION FEES

	FILING FEES		SEARCH FEES		EXAMINATION FEES		
		Small Entity		Small Entity		Small Entity	
Application Type	**Fee ($)**	**Fee ($)**	**Fee ($)**	**Fee ($)**	**Fee ($)**	**Fee ($)**	**Fees Paid ($)**
Utility	300	150	500	250	200	100	
Design	200	100	100	50	130	65	
Plant	200	100	300	150	160	80	
Reissue	300	150	500	250	600	300	
Provisional	200	100	0	0	0	0	

2. EXCESS CLAIM FEES

Fee Description	Fee ($)	Small Entity Fee ($)
Each claim over 20 (including Reissues)	50	25
Each independent claim over 3 (including Reissues)	200	100
Multiple dependent claims	360	180

Total Claims		**Extra Claims**	**Fee ($)**	**Fee Paid ($)**
_____	- 20 or HP =	_____	x _____	= _____

HP = highest number of total claims paid for, if greater than 20.

Independent Claims		**Extra Claims**	**Fee ($)**	**Fee Paid ($)**
_____	- 3 or HP =	_____	x _____	= _____

HP = highest number of independent claims paid for, if greater than 3.

Multiple Dependent Claims	
Fee ($)	**Fee Paid ($)**
_____	_____

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets		**Extra Sheets**		**Number of each additional 50 or fraction thereof**	**Fee ($)**	**Fee Paid ($)**
_____	- 100 =	_____	/ 50 =	_____ (round **up** to a whole number) x	_____	= _____

4. OTHER FEE(S)

	Fees Paid ($)
Non-English Specification, $130 fee (no small entity discount)	
Other (e.g., late filing surcharge): **FEE FOR FILING APPEAL BRIEF**	**$500.00**

SUBMITTED BY

Name (Print/Type)	**GUY H. ERIKSEN**	*Registration No. (Attorney/Agent)*	**41,736**	*Telephone*	**(609) 734-6807**
Signature					**August 9, 2005**

II. RELATED APPEALS AND INTERFERENCES

There are currently, and have been, no related Appeals or Interferences regarding Application Serial No. 10/075,839 known to the undersigned attorney.

III. STATUS OF THE CLAIMS

Claims 1-14 are rejected and the rejection of claims 1-14 are appealed.

IV. STATUS OF AMENDMENTS

All amendments were entered and are reflected in the claims included in Appendix I.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Independent claim 1 provides a method of detecting the reliability of a field of movement vectors of one image in a sequence of video images. A stability parameter Det_Stab(t) for the field is calculated on the basis of a comparison (Figure 1, 4 and Page 8, line 40-Page 9, line 8), over two successive images. The comparison (Figure 1, 4 and Page 8, line 40-Page 9, line 8) compares the number of occurrences of the majority vectors of the movement-vectors fields of each of these successive images. A field is defined as stable if the variation in the number of occurrences lies within a predefined bracket. Reliability (Figure 1, 7 and Page 9, lines 11-35) is decided on the basis of this stability parameter.

Independent claim 11 provides a device for detecting the reliability of a movement-vector field of one image from an image sequence. The device includes means (Figure 1, 4 and Page 8, line 40-Page 9, line 8) for comparing, over two successive images, the number of occurrences of majority vectors. Means are provided for calculating the stability parameter for the field Det_stab(t) on the basis of the comparison result. A field is defined as stable if the variation in the number of occurrences lies within a predefined bracket. Means are also provided for deciding the reliability (Figure 1, 7 and Page 9, lines 11-35) on the basis of this stability parameter.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The Examiner has rejected claims 1-3, 8, 9 and 11-14 as being anticipated under 35 USC 102(e) by Zhu (US 6,462,791).

The Examiner has rejected claims 4-7 and 10 as being unpatentable under 35 USC 103(a) over Zhu in view of Avis et al (US 4,864,398).

VII. ARGUMENT

Zhu when taken alone or in any combination with Avis et al. neither anticipates nor makes unpatentable the present claimed invention. Thus, reversal of the Final Rejection (hereinafter termed "rejection") of claims 1-3, 8, 9 and 11-14 under 35 USC 102(e) and claims 4-7 and 10 under 35 U.S.C. 103(a) is respectfully requested.

Overview of the Cited References

Zhu describes "a method and apparatus for transmitting images using constrained motion estimation and motion compensation...by first selecting the best matching orientation for each region in the image based on the majority voting of the motion vectors. Next, the motion vectors are encoded based on these locally best matched vectors. The resulting output is transmitted via a communication medium and received by a decoded, which provides motion compensation, by recovering the motion vectors for lost packets based on the neighboring vectors" (Col. 3, lines 32-45).

Avis et al. describe a televisions standards converter which comprises a motion analyzer for analyzing the motion between consecutive fields of an input television signal of one television standard and for deriving motion vectors in dependence on the motion. Avis et al. compare motion vectors from sequential fields. If the second vector differs highly from the first and third then it is deemed faulty and disregarded. If the third vector differs highly from the first and second vectors it is deemed that there must have been a scene change and should not be considered a continuation of the motion. If all three vectors are similar in motion then it is deemed a fluid motion.

Rejection of Claims 1-3, 8, 9 and 11-14 under 35 USC § 102(e)

CLAIMS 1-3, 8, 9 and 11-14

Reversal of the rejection of claims 1-3, 8, 9 and 11-14 under 35 U.S.C. 102(e) as being unpatentable over Zhu is respectfully requested. The rejection erroneously states that claims 1-3, 8, 9 and 11-14 are unpatentable over Zhu for the reasons discussed herein below.

Specifically, Zhu describes a motion estimation process. The process begins by obtaining "the best matching vector V^i_{best}...by computing the average of all motion vectors or using the majority voting process...After V^i_{best} is obtained...each motion vector is compared to the best matching vector V^i_{best} for orientation angle, or magnitude, or both...If the absolute difference is greater then the threshold, the motion vector V^k_i is set to zero...If the absolute difference is less than or equal to the threshold, the motion vector V^k_i is set to V^i_{best}" (Col. 5, lines 38-51).

The Office Action suggests that Figure 5 of Zhu displays a comparison over two successive images. However, contrary to the assertion in the Office Action, Figure 5 relates to a motion vector field of **one** image. This is unlike the present claimed invention which compares the number of occurrences of majority vectors within **two** successive images. Therefore, Zhu neither discloses nor suggests "a comparison, over **two successive images**, of the number of occurrences of the majority vectors" as claimed in claims 1 and 11 of the present invention. Furthermore, Figure 5 of Zhu relates to a single image, containing a single best motion orientation per region R (Col. 4, lines 51-60). Each motion vector of the region is then compared to this single best vector. This is unlike the present claimed invention which compares the majority vector of a region to the corresponding majority vectors of the same region in successive images. Therefore, Zhu neither discloses nor suggests "a comparison, over two successive images, of the number of occurrences of the **majority vectors** of the movement-vectors fields of each of these images" as claimed in claims 1 and 11 of the present invention.

Additionally, the Office Action contends that Zhu discloses a comparison of the number of occurrences of the majority vectors of the movement-vectors fields of each image. However, Zhu merely describes comparing each motion vector in a region to the best matching vector V^i_{best} so that it may adjust the motion vector accordingly if necessary. This is unlike the present claimed invention which compares the **number of occurrences** of the majority vectors throughout successive images. Therefore, Zhu neither discloses nor suggests "a comparison, over two successive images, of the **number of occurrences** of the majority vectors of the movement-vectors fields of each of these images" as claimed in claims 1 and 11 of the present invention.

The Office Action further suggests that Zhu discloses calculating a stability parameter based on the above mentioned comparison. However, Zhu uses the comparison of motion vectors to the best matching vector V^i_{best} to either set the motion vector to zero if above a threshold or set it to V^i_{best} if below the threshold. Unlike the present claimed invention, Zhu is not concerned with transmitting a stability parameter noting the reliability of movement vectors of a movement-vector field. Therefore, Zhu neither discloses nor suggests "**calculating a stability parameter** Det_Stab(t) for the field, on the basis of a comparison, over two successive images, of the **number of occurrences** of the majority vectors of the movement-vectors fields of each of these images" as claimed in claims 1 and 11 of the present invention.

The Office Action responds to the applicant's previous remarks by stating that the features upon which the applicant relied are not being recited in the claims. The applicant recited "A calculation of a difference between a first number of occurrences and a second number of occurrences". This is explained on page 9, lines 24-35, as a calculation which calculates if the "number of occurrences, corresponding to the maximum of occurrences relating to image t,...**is close to**, the number of occurrences corresponding to the maximum of occurrences relating to the image t-1". The applicant respectfully submits that this "calculation of a difference between a first number of occurrences and a second number of occurrences" is equivalent to the feature of "a comparison, over two successive images, of the number of occurrences of the majority vectors of the movement-vectors fields of each of these images" as recited in claims 1 and 11 of the present invention. The claims recite "a comparison...of the number of occurrences of the majority vectors...**of each of these images**". Therefore, there is

obviously a "number of occurrences" for each image. Accordingly, the phrase argued by the applicant in the previous action, i.e. is "first number of occurrences and...second number of occurrences" (cited by the applicant), clearly refer to the claimed feature of the "number of occurrences...of each of these images" (cited in claims 1 and 11).

As claims 2, 3, 8, 9 and 11-14 are dependant on independent claims 1 and 11, it is respectfully submitted that they are allowable fro the same reasons as discussed above.

Rejection of Claims 4-7 and 10 under 35 USC 103(a) over Zhu (US 6,462,791 B1) in view of Avis et al. (US 4,864,398).

In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the examiner to establish a factual basis to support the legal conclusion of obviousness. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596, 1598 (Fed.Cir. 1988). In so doing, the Examiner is expected to make the factual determinations set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17, 148 USPQ 459, 467 (CCPA 1966), and to provide a reason why one having ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion, or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. *Uniroya, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed.Cir. 1988), *cert. denied*, 488 U.S. 825 (1988); *Ashland Oil Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 28, 293, 227 USPQ 657, 664 (Fed.Cir. 1985), *cert. denied,* 475 U.S. 1017 (1986); *ACS Hosp. Sys., Inc. v. Montefiore Hosp.*, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed.Cir. 1984). These showings by the Examiner are an essential part of complying with the burden of presenting a *prima facie* case of obviousness. *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed.Cir. 1992).

CLAIMS 4-7 and 10

Dependent claims 4-7 and 10 include all the limitations contained in Independent claims 1 and 11. These claims further recite that the calculation of the stability parameter and disturbance parameter are in the time domain and can detect a change of scene in the video sequence.

Reversal of the rejection of claims 4-7 and 10 under 35 U.S.C. 103(a) as being unpatentable over Zhu in view of Avis et al. is respectfully requested. The rejection erroneously states that claims 4-7 and 10 are unpatentable over Zhu in view of Avis et al. for the reasons discussed herein below.

Specifically, the Examiner suggests that Avis et al. disclose calculating the vectors in a time-domain for detection of a change of scene in the video sequence. However, Avis et al., similarly to Zhu, neither disclose nor suggest "a comparison, over two successive images, of the **number of occurrences** of the majority vectors" as claimed in claim 1 of the present invention. Unlike Zhu, who compare motion vectors of the same image, Avis et al. compare "the motion vectors from sequential fields" (Col. 17, lines 13-14) and then determine if a vector signals a scene change, if the vectors belong to a single fluid motion or if one vector contains errors and should be disregarded. Nowhere do Avis et al. discuss the "**number of occurrences** of the majority vectors" as claimed in claim 1 of the present invention. Avis et al., similarly to Zhu, are merely concerned with the amplitude and direction of the motion vectors as they select a majority vector to represent a region and then compare it with vectors of another region (or sequential region).

The present claimed invention is not concerned with the direction or magnitudes of the vectors as is Avis et al. and Zhu. The present claimed invention is concerned with the "**number of occurrences** of the majority vectors". "If this number of occurrences, corresponding to the maximum of occurrences relating to the image t, whatever the value to which this maximum corresponds, is close to the number of occurrences corresponding to the maximum of occurrences relating to the image t-1, that is to say lies in a bracket defined by K2 and this maximum, then the vector field is assumed to be stable and the parameter Det_Stab is set at 1" (Page 9, lines 27-35).

Additionally, it is respectfully submitted that there is no reason or motivation to combine the systems of Zhu and Avis et al. Zhu is concerned with comparing motion vectors in the same image while Avis et al. are concerned with a process based on the evolution of motion vectors over time. It is respectfully submitted that Zhu and Avis et al. are related to two totally different systems.

However, even if one were to combine the systems of Zhu and Avis et al. the combination would not be concerned with a process based on the evolution of the **number of occurrences** of the majority vectors over time as in the present claimed invention as both Zhu and Avis et al. are concerned with comparing the magnitude and direction of actual motion vectors. Rather, the combination would compare each vector to the V^{i}_{best} vector and then determine if there was a scene change.

This is fundamentally different from the present claimed invention for the present claimed invention specifically neglects comparing motion vectors and compares only the **number of occurrences** of motion vectors. Therefore, this combination would neither disclose nor suggest "a comparison, over two successive images, of the **number of occurrences** of the majority vectors" as claimed in claim 1 of the present invention.

Dependent claims 4-7 and 10 are dependant on Independent claim 1 and thus include all the limitations contained therein. Applicant respectfully submits that all arguments presented above, as they relate to claim 1, are also applicable to claims 4-7 and 10 and are incorporated herein. Therefore, Applicant respectfully submits that that claims 4-7 and 10 are patentable for the same reasons as discussed above regarding claim 1. Furthermore, it is respectfully submitted that this rejection has been satisfied and should be withdrawn.

VIII CONCLUSION

Zhu neither disclose nor suggest a method of detecting the reliability of a field of movement vectors using "a comparison, over two successive images, of the **number of occurrences** of the majority vectors" as claimed in claims 1 and 11 of the present invention.

Furthermore, neither Zhu nor Avis et al., when taken alone or in any combination, disclose or suggest a method of detecting the reliability of a field of movement vectors using "a comparison, over two successive images, of the **number of occurrences** of the majority vectors" as claimed in claims 1 and 11 of the present invention.

Accordingly it is respectfully submitted that Claims 1-14 are patentable in view of Zhu and Avis et al., when taken alone or in combination, and that the rejections of claims 1-14 are satisfied and should be withdrawn.

Respectfully submitted,

Gerard Briand et al.

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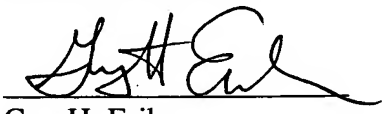
By: 

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August 9, 2005

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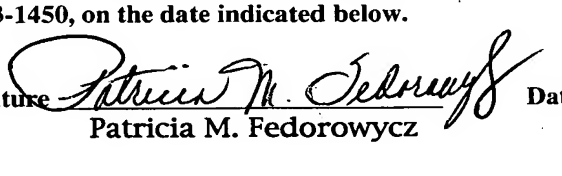
Signature  **Date:** August 9, 2005

Patricia M. Fedorowycz

APPENDIX I - APPEALED CLAIMS

1. (Original) Method of detecting the reliability of a field of movement vectors of one image in a sequence of video images, characterized in that it includes a stage of calculating a stability parameter Det_Stab(t) for the field, on the basis of a comparison (4), over two successive images, of the number of occurrences of the majority vectors of the movement-vectors fields of each of these images, a field being defined as stable if the variation in the number of occurrences lies within a predefined bracket, and a stage of deciding on reliability (7) on the basis of this stability parameter.

2. (Original) Method according to Claim 1, characterized in that it also includes a stage of calculating a disturbance parameter Det_Dist(t) for the field, on the basis of a comparison (5), over two successive images, of the number of occurrences of the movement vector corresponding to the majority vector of one of the two images (2, 3), a field being defined as not disturbed if the variation in the number of occurrences lies within a predefined bracket, and in that the decision stage (7) is also based on this disturbance parameter.

3. (Original) Method according to Claim 1, characterized in that it also includes a stage of calculating a disturbance parameter Det_Dist(t) for the field, a field being defined as not disturbed if the variation in the number of occurrences of the zero vector in the movement-vectors field, between two successive images, lies within a predefined bracket, and in that the decision stage (7) is also based on this disturbance parameter.

4. (Original) Method according to Claim 1, characterized in that it includes a stage of calculating, for an image (t), a time-domain stability state Stabl_Stat(t) (6) on the basis of the stability parameters Det_Stab(t) for this image and of P-1 preceding images (4), a state being declared as stable if a minimum number Q of stable fields is detected among these P images, P and Q being integers such that P > Q, and in that the decision stage (7) is also based on this stability state.

5. (Previously Presented) Method according to Claim 2, characterized in that it includes, for an image (t), a stage of calculating a disturbance state Dist_Stat(t) (6), on the basis of the disturbance parameters Det_Dist (t) for this image and for M-1 preceding images (5), a state being declared to be disturbed or not disturbed depending on whether a minimum number L of non-disturbed fields are detected among these M images, M and L being integers such that M > L, and in that the decision stage (7) is also based on this disturbance state.

6. (Original) Method according to Claim 5, characterized in that it also includes a stage of calculating a stability parameter Det_Stab(t) for the field, on the basis of a comparison (4), over two successive images, of the number of occurrences of the majority vectors of the movement-vectors fields of each of these images, a field being defined as stable if the variation in the number of occurrences lies within a predefined bracket, and in that a vector field is declared to be reliable if a stable field and a non-disturbed state are detected.

7. (Previously Presented)Method according to Claim 4, characterized in that it also includes, for an image (t), a stage of calculating a disturbance parameter Det_Dist(t) for the field, on the basis of a comparison (5), over two successive images, of the number of occurrences of the movement vector corresponding to the majority vector of one of the two images (2, 3), a field being defined as not disturbed if the variation in the number of occurrences lies within a predefined bracket, as well as a stage of calculating a disturbance state Dist_Stat(t) (6) on the basis of the disturbance parameters Det_Dist(t) for this image and for M-1 preceding images (5), a state being declared as disturbed or not disturbed depending on whether a minimum number Q of non-disturbed fields are detected or not detected among these M images, M and Q being strictly positive integers, and in that a vector field is declared to be reliable if a stable field, a disturbed and stable state are detected.

8. (Previously Presented) Method according to Claim 1 characterized in that the occurrences of the vectors are relative to the value of the horizontal component of these vectors.

9. (Original) Method according to Claim 1, characterized in that the decision stage (7) also takes into account a parameter for the detection of saturation of the movement-vectors field.

10. (Original) Method according to Claim 1, characterized in that the decision stage (7) also takes into account a parameter for detection of a change of scene in the video sequence.

11. (Original) Device for detecting reliability of a movement-vector field of one image from an image sequence, characterized in that it includes:

- means (4) for comparing, over two successive images, the number of occurrences of the majority vectors of the movement-vectors fields of each of these images,
- means for calculating a stability parameter Det_Stab(t) for the field, on the basis of the comparison result, a field being defined as stable if the variation in the number of occurrences lies within a predefined bracket,
- and means for deciding on reliability (7) on the basis of this stability parameter.

12. (Original) Device according to Claim 11, characterized in that it also includes:

- means (4) for comparing, over two successive images, the number of occurrences of the movement vector corresponding to the majority vector of one of the two images,
- means for calculating a disturbance parameter Det_Dist(t) for the field, a field being defined as not disturbed if the variation in the number of occurrences lies within a predefined bracket,
- the means for deciding on reliability (7) also taking this disturbance parameter into account.

13. (Original) Frequency converter, characterized in that it comprises a device according to Claim 11.

14. (Original) Video coder, characterized in that it comprises a detection device according to Claim 11.

15. (Previously Presented) Method according to Claim 2 characterized in that the occurrences of the vectors are relative to the value of the horizontal component of these vectors.

16. (Previously Presented) Method according to Claim 3 characterized in that the occurrences of the vectors are relative to the value of the horizontal component of these vectors.

APPENDIX II - EVIDENCE

Applicant relies on no evidence other than the arguments presented hereinabove.

APPENDIX III - RELATED PROCEEDINGS

Applicants respectfully submit that there are no related proceedings in this present application.

APPENDIX IV - TABLE OF CASES

1. *In re Fine*, 5 USPQ 2d 1600, (Fed Cir. 1988)

2. *ACS Hospital Systems Inc v. Montefiore Hospital*, 221 USPQ 929,933 (Fed. Cir. 1984)

3. *Graham v. John Deere Co.*, 383 U.S. 1, 17, 148 USPQ 459, 467 (CCPA 1966)

4. *Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed.Cir. 1988), *cert. denied*, 488 U.S. 825 (1988)

5. *Ashland Oil Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 28, 293, 227 USPQ 657, 664 (Fed.Cir. 1985), *cert. denied,* 475 U.S. 1017 (1986)

APPENDIX V - LIST OF REFERENCES

U.S. Pat. No.	Issued Date	102(e) Date	Inventors
6,075,575	Jun. 13, 2000		Schein et al.
5,828,419	Oct. 27, 1998		Bruette et al.
5,812,123	Sep. 22, 1998		Rowe et al.
6,563,515 B1	May. 13, 2003		Reynolds et al.

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